WE CLAIM:

Sub A4

1. A method of determining whether the bit disparity in a data stream is acceptable, comprising the steps of:

sampling the data stream,

detecting the number of samples of the data stream which have a predetermined one of two logical values within a time period,

calculating the ratio of samples detected to have the predetermined logical value to the number of samples considered, and

comparing the calculated ratio with a predetermined acceptable threshold.

2. A method of determining whether the bit disparity in a data stream is acceptable, comprising the steps of:

generating an inverted data stream which is the time-synchronous logical inverse of the data stream,

simultaneously sampling the data stream and the inverted data stream,

detecting the number of samples of the data stream which have a predetermined one of two logical values within a time period,

detecting the number of samples of the inverted data stream which have a different predetermined logical value within the same time period,

correlating the detected samples of the data stream with the detected samples of the inverted data stream,

discarding those samples of the data stream which are detected in which the corresponding samples of the inverted data stream are not also detected;

calculating the ratio of the remaining samples in one of the data streams detected to have the corresponding predetermined logical value to the number of samples considered but not discarded, and

comparing the calculated ratio with a predetermined acceptable threshold.

3. A bit disparity monitor for monitoring the bit disparity of a data stream comprising:

a sub-sampler for sub-sampling the data stream;

a detector for identifying the number of samples of the data stream which have a predetermined one of two logical values within a time period;

a calculator for determining the ratio of samples detected by the detector to have the corresponding predetermined logical value to the number of samples considered; and

a comparator for comparing the ratio with a predetermined acceptable threshold.

4. A bit disparity monitor according to claim 3 in which the detector identifies samples having a value of logical one.

5. A bit disparity monitor according to claim 3 in which the sub-sampler samples at a rate of 50 MHz.

6. A transmitter for transmitting a data stream along a communication link, comprising the bit disparity monitor of claim 3.

7. A node for connection with a communications link along which the node may transmit a data stream, comprising the bit disparity monitor of claim 3.

8. A communications network comprising nodes interconnected by communications links along which data streams are transmitted and received, comprising the bit disparity monitor of claim 3.

9. A bit disparity monitor for monitoring the bit disparity of a data stream comprising:

a sub-sampler for sub-sampling the data stream;

a 1's detector coupled to the sub-sampler for identifying those samples of the data stream which have a logical value of one;

a 1's counter coupled to the 1's detector for determining the number of identified samples within a time period;

a samples counter for determining the number of samples within the time period;

a clock generator coupled to the sub-sampler for indicating when a sample should be taken and coupled to the samples counter for indicating when a sample was taken;

a timer coupled to the 1's counter and the samples counter for indicating the start and end of the time period;

a comparator coupled to the 1's counter and the samples counter for comparing the number of identified samples with the total number of samples taken within the time period; and

a memory element coupled to the comparator for storing the comparison results for monitoring.

10. A bit disparity monitor for monitoring the disparity of a data stream comprising:

an inverter for generating an inverted data stream which is the time-synchronous logical inverse of the data stream;

a sub-sampler for simultaneously sub-sampling the data stream and the inverted data stream;

a first detector for identifying the number of samples of the data stream which have a predetermined one of several logical values within a time period;

a second detector for identifying the number of samples of the inverted data stream which have a different predetermined logical value within the same time period;

a correlator for correlating the samples detected by the first and second detectors and discarding those samples detected by the first detector in which the corresponding sample is not also detected by the second detector;

a calculator for determining the ratio of remaining samples detected by one of the detectors to have the corresponding predetermined logical value to the number of samples considered but not discarded; and

a comparator for comparing the ratio with a predetermined acceptable threshold.

11. A bit disparity monitor according to claim 10 in which the first detector identifies samples having a value of logical one.

12. A bit disparity monitor according to claim 10 in which the second detector identifies samples having a value of logical zero.

13. A bit disparity monitor for monitoring the bit disparity of a data stream comprising:

an inverter for generating an inverted data stream which is the time-synchronous logical inverse of the data stream;

a first sub-sampler for sub-sampling the data stream;

a second sub-sampler for sub-sampling the inverted data stream;

a 1's detector coupled to the first sub-sampler for identifying those samples of the data stream which have a logical value of one;

a 0's detector coupled to the second sub-sampler for identifying those samples of the inverted data stream which have a logical value of zero;

a samples counter for determining the number of samples within the time period;

a correlator coupled to the 1's detector, the 0's detector and the samples counter for correlating the samples identified by the 0's detector and discarding those samples which are not identified by both the 1's detector and the 0's detector;

a 1's counter coupled to the correlator for determining the number of remaining identified samples within a time period;

a clock generator coupled to the first and second sub-samplers for indicating when a sample should be taken and coupled to the samples counter for indicating when a sample was taken;

a timer coupled to the 1's counter and the samples counter for indicating the start and end of the time period;

a comparator coupled to the 1's counter and the samples counter for comparing the number of identified samples with the total number of samples taken within the time period; and

a memory element coupled to the comparator for storing the comparison results for monitoring.

14. A computer-readable medium for storing computer-executable instructions which, when executed by a processor in a bit disparity monitor corresponding to a data stream to:

sample the data stream,

detect the number of samples of the data stream which have a predetermined one of a plurality of logical values within a time period,

calculate the ratio of samples detected to have the predetermined logical value to the number of samples considered, and

compare the calculated ratio with a predetermined acceptable threshold.

15. A computer-readable medium for storing computer-executable instructions which, when executed by a processor in a bit disparity monitor corresponding to a data stream to:

generate an inverted data stream which is the time-synchronous logical inverse of the data stream,

simultaneously sample the data stream and the inverted data stream,

detect the number of samples of the data stream which have a predetermined one of several logical values within a time period,

detect the number of samples of the inverted data stream which have a different predetermined logical value within the same time period,

correlate the detected samples of the data stream with the detected samples of the inverted data stream,

discard those samples of the data stream which are detected in which the corresponding samples of the inverted data stream are not also detected;

calculate the ratio of the remaining samples in one of the data streams detected to have the corresponding predetermined logical value to the number of samples considered but not discarded, and

compare the calculated ratio with a predetermined acceptable threshold.